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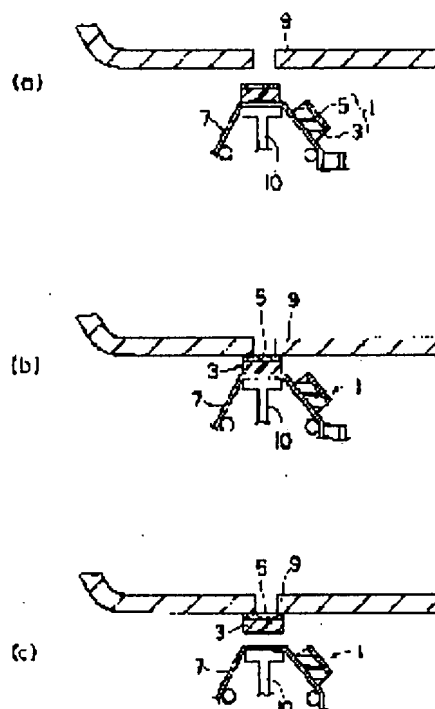
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(54) PRESSURE-SENSITIVE ADHESIVE TAPE MATERIAL, ITS PRODUCTION, AND METHOD AND APPARATUS FOR STICKING THE SAME

(57)Abstract:

PURPOSE: To obtain the subject material suitable for mechanization and automation by applying a pressure-sensitive adhesive tape having a pressure-sensitive adhesive layer on one side to a carrier so that the side having the pressure-sensitive layer may be opposite to the side of the carrier.

CONSTITUTION: This adhesive tape material is provided with a pressure-sensitive adhesive tape having a pressure-sensitive adhesive layer on one side and a carrier which supports the other side of the pressure-sensitive adhesive tape with a force weaker than the pressure-sensitive adhesiveness to an adherend of the pressure-sensitive adhesive tape. A pressure-sensitive adhesive layer 5 formed on one side of a pressure-sensitive adhesive tape 1 is on the side opposite to the side of the carrier 7, and the other side not having the pressure-sensitive layer 5 is supported on the carrier 7. By bringing the tape 1 into contact with an adherend 9, the layer can directly be stuck to the adherend 9, and the carrier 7 is separated from the bonded part simultaneously with the release of the tape 1



from the carrier 7.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the manufacture approach of the adhesive tape material which can realize automation of the attachment activity of the adhesive tape for masking in an automobile production process etc., and adhesive tape material, the attachment approach of adhesive tape, and attachment equipment in more detail about the manufacture approach of adhesive tape material and adhesive tape material, the attachment approach of adhesive tape, and attachment equipment.

[0002]

[Description of the Prior Art] The car body of an automobile has about 50-100 holes per set of the diameter 10 of the hole for wire harness wiring, the screw hole for component mounting, etc. - 30phi extent. About these holes, it is painting, after masking and making it like on a tape, and this tape is removed, after [a coating does not adhere to a hole at the time of car-body paint, or does not form membranes] finishing paint.

[0003] In present, the dimension of the tape which ***** which cuts by hand the masking tape with which the binder was applied to one side to suitable die length, and sticks it on a hole cut off by this approach becomes incorrectness, and working hours also need long duration with a not sufficient result. There is an approach the piece of a masking tape beforehand cut into masking by the predetermined configuration uses what was stuck on the releasing paper as an approach of improving this. However, since a binder layer is turned to a releasing paper side and it is made to rival in order to make it such adhesive tape not usually produce un-arranging during handling, it will remove one piece at a time from a releasing paper, and a binder layer will be turned and stuck on a hole. Therefore, when performing masking etc., the process supported until it sticks the process which removes a tape from a releasing paper, and the tape which removed from the releasing paper is needed before an attachment process.

[0004] In order to mechanize this process, various technical problems which must be solved, such as accuracy at the time of positioning the certainty and the removed tape at the time of removing the piece of a mask from a releasing paper in an attachment location, occurring, therefore conquering these, a simple mechanization means which is usable in the limited workspace in a car production line is not put in practical use, and a proposal is not made,

either.

[0005]

[Problem(s) to be Solved by the Invention] As mentioned above, the conventional adhesive tape had the trouble that mechanization of a process and automation were difficult.

[0006] This invention was made in order to solve the technical problem of such a conventional technique, and it aims at offering the adhesive tape material suitable for mechanization and automation, and its manufacture approach.

[0007] Moreover, this invention aims at offering the attachment approach and attachment equipment which use the above-mentioned adhesive tape material.

[0008]

[Means for Solving the Problem and its Function] In order to attain the above-mentioned purpose, as a result of repeating research wholeheartedly, in case this invention persons support on a carrier the adhesive tape which has an adhesive layer on one side, they find out that what turned the field with an adhesive layer to the carrier and opposite side is promising, and came to invent the adhesive tape material and its manufacture approach of this invention.

[0009] Furthermore, it found out that the attachment approach and attachment equipment using this adhesive tape material fitted mechanization of an attachment process.

[0010] The adhesive tape material of this invention is equipped with the adhesive tape which has an adhesive layer in one field, and the carrier which supports other fields of this adhesive tape with the force weaker than the adhesion over the adherend of this adhesive tape.

[0011] Moreover, the manufacture approach of the adhesive tape material of this invention is equipped with the process which makes a carrier support the process which forms in one field the adhesive tape which has an adhesive layer, and the part which is equivalent to other fields of this adhesive tape so that adhesive tape may be supported with the force weaker than the adhesion of this adhesive tape to adherend by the carrier.

[0012] Furthermore, the attachment approach of this invention is contacted so that the adhesive layer of the above-mentioned adhesive tape material may be stuck by adherend, and it keeps away this carrier from this adherend so that this adhesive tape may secede from a carrier.

[0013] Moreover, the attachment equipment of this invention is equipped with a means to position this adhesive tape of the above-mentioned adhesive tape material near the adherend, a means to make adherend contact so that this positioned adhesive tape may be stuck by adherend, and the means that keeps away this carrier from this adherend so that this adhesive tape may secede from a carrier.

[0014] Hereafter, the adhesive tape material of this invention is explained. In addition, the vocabulary "adhesive tape" used by this invention shall be the thing of the wide sense which means the thin layer-like thing which has an adhesive layer, and shall be limited to one field by neither size nor the configuration not only including a tape but including a label, a seal, a ribbon, a film, a sheet, etc.

[0015] The adhesive tape material concerning this invention is equipped with the adhesive tape which has an adhesive layer in one field, and the carrier which supports other fields of this adhesive tape with the force weaker than the adhesion over the adherend of this adhesive

tape, and is characterized by supporting with the field which turns the adhesive layer 5 prepared in one side of the base material 3 of adhesive tape 1 in the direction opposite to a carrier 7, and does not have the adhesive layer of another side in a detail as shown in drawing 1 on a carrier. While a binder layer is direct stuck on adherend and a carrier is pulled apart from a covering part by contacting this adhesive tape to adherend 9, adhesive tape secedes from a carrier. Therefore, it is possible to perform attachment of adhesive tape and balking from a carrier to coincidence by the above-mentioned configuration. Although it is made by attachment of adhesive tape by pressing from the tooth-back side of a carrier using the press means 10 as shown in drawing 1, the attachment approach of this invention should just be the actuation which is contacted so that may limit to what is illustrated, it may not be interpreted, adhesive tape may be relatively brought close to a covering part and it may adhere.

[0016] In ****, adhesive tape may be supported so that a tape can be made to secede from a carrier by the force smaller than the force of taking adhesion with an adhesive layer and a covering side to exfoliate, and it may be what kind of support force. For example, it is also possible for the wafer to have adhered to the sheet, after forcing the wafer of rubber or resin on paper, a sheet plastic, glass, etc. lightly and lifting a hand, but to be able to use so that the slight adhesion in the case of the ability to lengthen easily and remove, and to use electric force, electric magnetism, etc. like adhesion by static electricity. Therefore, it does not need to prepare a binder layer specially between a base material and a carrier.

[0017] In an above-mentioned configuration, if adhesive tape is two or more pieces 11 and 13 of adhesive tape which it is formed in a predetermined configuration and made to arrange on a carrier regularly, or 15 as shown in drawing 2 -4, it can guide to the location which sticks the piece of adhesive tape certainly by sending a carrier according to the array regulation of the piece of adhesive tape. Therefore, since it becomes possible to repeat attachment of adhesive tape and balking from a carrier mechanically, it is convenient to automation of a routing. Of course, the configuration of the piece of adhesive tape and array spacing are changeable suitably if needed.

[0018] In the adhesive tape material of this invention by the above-mentioned fundamental configuration, it is possible to use a binder which is used for the usual adhesive tape, and it is suitably chosen according to an application. About a base material and a carrier, it can choose from a usually usable ingredient suitably so that few above-mentioned support force may be acquired. Therefore, although the adhesive tape material concerning this invention can be applied and changed widely, it is possible by providing an element as shown further below to make it a still more desirable thing at practical points, such as increase in efficiency of an attachment activity, the ease of handling, and manufacture ease.

[0019] First, when contraction of conveyance of adhesive tape material, handling ease, and attachment workspace is taken into consideration, as for a tape and a carrier, it is desirable that it can wind in the shape of a roll. In this case, since the tooth back of an adjoining carrier contacts the adhesive layer of a tape as notionally shown in drawing 5 and 6, it is necessary to devise the point which should be careful of so that the tooth back of a carrier may not paste an adhesive layer. Although it is also possible to wind up inserting a separator in between, it is thought efficient to process by the remover 71 at the tooth back of a carrier, and it is

economical. Therefore, as for a carrier, it is desirable to use the sheet of the quality of the material in which remover processing is possible. Generally, metal films [, such as synthetic-resin film; aluminum foil,], such as paper; polyethylene, such as paper of fine quality, glassine, and the parchment paper, polyethylene terephthalate, polypropylene, and a polyvinyl chloride, etc. are used as a base material of an exfoliation sheet, and the carrier material used for the adhesive tape material of this invention can be suitably chosen from these things if needed. A remover 71 can use things usually used, such as resin and silicone, and can choose them suitably according to the component of an adhesive layer. Whenever [exfoliation] is set up so that it may be preferably set to 5g of exfoliation force, 50mm - 100g / about 50mm. Under the present circumstances, if a tape is arranged outside like drawing 5 and a carrier is wound up, since the adhesive face of a tape will become unreserved at the outermost periphery of a roll, if only a carrier is rolled further 1 round and an outside is covered, it will not produce un-arranging in conveyance etc. When carrying out a tape inside like drawing 6 and winding up a carrier, it is good to wind only a carrier around the heart 73 1 round first, as shown in drawing, to make it cover, or to perform exfoliation processing to the outside surface of the heart 73. The heart can also be excluded. Moreover, when exfoliation processing needs to be performed also to the tape support side of a carrier for convenience' sake on a production process etc., whenever [exfoliation / of a support side] must be set up lower than whenever [rear face's exfoliation]. It is because it will shift to the rear face of the carrier with which a tape adjoins and will secede from a support side, when a carrier is pulled out from a roll if whenever [exfoliation / of a support side] is higher.

[0020] Next, when using it for masking in a car production process and it takes into consideration making the tape stuck on the covering side exfoliate from a covering side, the thing of a base material of the quality of the material which has heat shrink nature is desirable. It is because a tape base material will contract at the time of the heat-treatment which in masking of a car body is performed in order to dry a coating after paint and it will become easy to separate from a covering side, if the base material of heat shrink nature is used.

Although it has heat shrink nature, as an example, thermoplastic resin material, thermoplastic fiber materials, etc., such as polyethylene, polypropylene, polystyrene, polyvinyl acetate, a polyvinyl chloride, a polyvinylidene chloride, fluorine resin, polyvinyl alcohol, a polymethyl methacrylate, polymethylacrylate, polyethylene oxide, polyphenylene oxide, a polycarbonate, polyethylene terephthalate, a polyethylene glycol, nylon 6, Nylon 66, and thermoplastic polyurethane, are mentioned, in these, degree of crystallinity increases with heating and a heat shrink advances. Furthermore, since it usually heats in an about 90-140-degree C temperature field in case a coating is dried, what carries out a heat shrink in this temperature region is desirable. Furthermore, as for the rate of a heat shrink at this time, it is desirable that it is 5% or more, therefore it can choose one or 2 or more from thermoplastics and fiber suitably, and can use it in the form of independence, combination, or a mixed constituent so that these conditions may be fulfilled. Especially, although it is desirable, as an example, an amorphous polyolefine [, such as polyethylene and polypropylene,], polymethacrylic acid, polyurethane, and styrene-isoprene block copolymer etc. is mentioned.

[0021] Furthermore, since it is thought most economical to give slight adhesion by setting up

the combination of a carrier and a base material suitably about the point which supports a base material on a carrier, the thing suitable for this approach is described. Therefore, it is not necessary to take into consideration electric or the points concerning the support nature under following publications when taking the magnetic approach, such as selection of an ingredient which is easy to carry out electrostatic adhesion, and magnetic-substance combination.

[0022] Since it is thought that the one where a touch area is larger is easy for adhesion of two bodies, it is thought easy to support on a carrier so that it may be easy to demonstrate surface adhesion even if the direction of film-like resin material is the same matter, therefore the above-mentioned support conditions may be fulfilled rather than fiber materials, such as textile fabrics and a nonwoven fabric. Therefore, it is more desirable for the surface part of the base material which touches a carrier to be a resin film. Therefore, as for a base material, in this point, it is desirable to be what allotted the resin film layer to the field supported by resin film independence or the carrier, and to be constituted.

[0023] However, when cutting into the configuration of a request of a tape by approaches, such as blanking, and manufacturing the piece of a tape of a predetermined configuration after, manufacturing the tape which continued through the laminating process of a base material layer and a binder layer on the other hand, since a resin film tends to cause deformation and a gap by the pressure, exact control of the configuration of the piece of a tape may be difficult for it. Since a fibrous thing can suppress deformation and a gap compared with this, if a fiber cloth etc. is incorporated into tape structure, the deformation and the gap of blanking in the case can be prevented and it can cut correctly. It is thought optimal to use a nonwoven fabric in respect of the ease of cutting especially.

[0024] Therefore, if the above is considered and combined, a thing as shown in drawing 7 and 8 can be mentioned as an example of the structure of an effective tape. In drawing 7, the layer of a fiber material 33 is prepared in the layer of the binder 5 formed on the layer of the resin film 31 of a tape 1, and the fiber material 35 is incorporated in the resin film layer 31 in drawing 8.

[0025] Since the fiber material 33 is separated with the resin film 31 in the case of drawing 7, the textile fabrics and the nonwoven fabric which do not necessarily need to be heat shrink nature, therefore were made of rayon etc. can be used, and you may replace with other ingredients which can prevent the deformation and the gap at the time of being mold omission. The thickness of about 40-200 micrometers in thickness, superintendent officer about eight to 30 g/m², and a resin film layer has [the fiber material 33 of drawing 7] about 10-60 micrometers suitable for the thickness of about 5-10 micrometers and a binder layer.

[0026] On the other hand, as for a fiber material 35, in drawing 8, it is desirable that it is heat shrink nature as a heat shrink is carried out with the resin film 31. in this case, a contractile viewpoint to the fiber material 35 -- eyes 6 - 25 g/m² extent -- more -- desirable -- 10 - 20 g/m² It is desirable to use the nonwoven fabric made for the fiber of a polyethylene system or a polypropylene system. Although wet and the nonwoven fabric made from which the dry-type process can also be used, the porous thing which has few contents, such as a binder component, is suitable. As for the thickness of about 80-140 micrometers and a binder layer, about 40-200-micrometer about 10-60 micrometers are more preferably suitable for the

thickness of the whole cast film layer into which the thickness of the fiber material 35 of drawing 8 built about 30-160 micrometers and a nonwoven fabric.

[0027] Moreover, as shown in drawing 9, the in-between structure where it is located between the layers of a base material 31 and a binder 5 also has an usable fiber material 37, and it is suitably decided in consideration of the convenience on a production process, the dependability of a product, etc. about which structure is chosen.

[0028] The binder used for the adhesive tape material of this invention As a principal component, natural rubber, regenerated rubber, SBR, polyisobutylene rubber, The rubber system binder containing polyisoprene rubber etc.; An acrylic acid, methyl acrylate, Ethyl acrylate, 2-hydroxyethyl acrylate, butyl acrylate, 2-ethylhexyl acrylate, octyl acrylate, a methacrylic acid, Although what is used for the usual adhesive tape, such as an acrylic binder which uses the polymer or copolymers of an acrylic monomer, such as methyl methacrylate, ethyl methacrylate, n-butyl methacrylate, and iso-butyl methacrylate, as a principal component, can be used About what is used as masking material, it is desirable to choose what has the adhesion of extent which can fully stick and separates from a covering side according to the heat shrink force of a base material. Since a silicone system binder may make difficult use of the silicone system remover usually used, it requires cautions on the occasion of use. What added the tackifier, the bulking agent, the softener, the cross linking agent, etc. if needed is sufficient as a binder.

[0029] The adhesive tape material of this invention can be manufactured using techniques usually used, such as coating, a laminating, sinking in, and an imprint. The adhesive tape which is manufactured according to the process which makes a carrier support the part equivalent to other fields of this adhesive tape so that adhesive tape may be supported with the force weaker than the process which forms in one field fundamentally the adhesive tape which has an adhesive layer, and the adhesion of this adhesive tape to adherend by the carrier, and has an above-mentioned laminated structure like drawing 7-9 can be prepared by the manufacture approach which is indicated below.

[0030] Approach (1): The field as for which the film 7 for carriers which performed remover 71 processing to one side does not carry out exfoliation processing is made into a support side, and a thermoplastics film is formed in a support side. That is, cast coating of the solution made to dissolve thermoplastics 31 in solvents, such as toluene and ethyl acetate, is carried out on a carrier film using a roll coater, a die coating machine, etc. On the other hand, in the binders 5, such as a rubber system or acrylic, bilayer sinking in or the thing which carried out the laminating is prepared to both sides of textile materials 33, and the tape shown at ***** and drawing 7 is formed on the thermoplastics applied to the carrier film to them.

[0031] Approach (2): Remover processing of whenever [exfoliation / which is different to both sides of the film 7 for carriers] is performed, and the low processing side 75 of detachability is made into a support side. Next, the solution of thermoplastics 31 is applied to the support side of a carrier so that the solid content thickness of resin may be set to about 5-10 micrometers using a knife coating machine, a reverse coating machine, etc., and a thermoplastics film is formed. On the other hand, a binder 5 is applied on the exfoliation processing side of an one side releasing paper, a fiber material 33 is carried on it, further, on it, the adhesion material 5 is

applied and a binder is infiltrated to both sides of a fiber material. If the laminating of the bilayer sinking-in fiber material 33 on an one side releasing paper is carried out on the thermoplastics film formed in the carrier, the adhesive tape shown in drawing 10 will be obtained. This has the same laminated structure as what is shown in drawing 7.

[0032] Approach (3): (2) Remover processing of a degree which is different to both sides of the carrier film 7 by the same approach is performed. The heat shrink nature fiber material 35 is immersed and infiltrated into the solution of thermoplastics 31, the obtained fiber material 35 is applied to the low support side of whenever [carrier's 7 exfoliation] using a roll coater, a dip coater, etc., and the thermoplastics cast film containing a fiber material is formed. The adhesive tape which has the same laminated structure as what is shown in drawing 8 is obtained by using a roll coater or a die coating machine, and besides, imprinting and applying what once applied binders, such as a rubber system and acrylic, on direct spreading or an one side releasing paper.

[0033] Approach (4): (2) Remover processing is performed to both sides of the carrier film 7 by the same approach. The field which thermoplastics 31 solution was infiltrated into one side of the heat shrink nature fiber material 37, and sank in is turned to the carrier film 7, and a fiber material 37 is put on the low support side of whenever [carrier film's exfoliation]. On a fiber material 37, a roll coater or a die coating machine is used, it applies by imprinting what once applied binders, such as a rubber system and acrylic, on the one side releasing paper directly, and the adhesive tape which has the same laminated structure as what is shown in drawing 9 is obtained.

[0034] Above (1) - (4) If it cuts into the configuration of a request of only a tape by blanking and an unnecessary part is removed when the adhesive tape which continued using the all directions method is obtained, adhesive tape constitutes the piece of a tape regularly located in a line on the carrier as shown in drawing 2 -4. As for blanking, it is desirable to perform the binder layer of adhesive tape in the condition of having covered with the one side releasing paper, and the roll-like adhesive tape material concerning this invention is obtained by removing the piece of a releasing paper which remained on the piece of a tape after mold omission, and winding up a carrier in the shape of a roll.

[0035] Since it is possible to make a tape adhere to a carrier by the moderate force with the pressure at the time of blanking as for the approach of cutting into the piece of a tape the tape on which the **** continued by blanking, it is thought that it is desirable. However, the laminating of a thermoplastics film, a fiber material, and the binder may be carried out one by one so that the manufacture approach of the adhesive tape material which supported the piece of a tape concerning this invention of not being restricted to an above-mentioned thing may be natural, for example, may become a desired configuration in the support side of a carrier.

Moreover, after forming the continuation tape lacking in the binder 5 of the maximum upper layer of the laminated structure of drawing 7 -9 and forming in a desired configuration by blanking, it is also possible to carry out the laminating of the binder 5 of the outermost layer.

[0036] The adhesive tape material concerning this invention can be stuck simple with the equipment 100 of a configuration as shown in drawing 11.

[0037] the case 101 of equipment -- a core [shaft / 0] -- carrying out -- rotation -- the rockable

lever 103 is formed and it connects with the segment 105 by the link 107. A gearing 105 meshes with a gearing 109 and the wheel 111 for rolling round the carrier of adhesive tape material is on a gearing's 109 core. If 1 **** of levers 103 is made to rock according to this configuration, a segment 105 makes one revolution, and a gearing 109 will be rotated only while a gearing's 105 gear tooth has geared with a gearing's 109 gear tooth. Therefore, a gearing 109 and a wheel 111 are rotated, when not rotating but moving to A and an opposite direction, while moving a lever 103 in the direction of A in drawing. Latch 113 regulates a gearing's 109 hand of cut only to an one direction, and the spring 115 is formed in order to energize a lever 103 in the direction opposite to A.

[0038] There is a wheel 117 for holding roll-like adhesive tape material in a case 101, and the press member 121 which can slide [both-way] on the direction of B in drawing is formed near [tip opening 119] the case 101. The carrier 7 prolonged from the adhesive tape material held at the wheel 117 passes the piece 123 of a guide, passes along the press member 121 top, and is rolled round by the wheel 111 within a case.

[0039] Moreover, the edge 125 opposite to the rocking edge of a lever 103 is connected with the press member 121 and a string 127, and the press member 121 is energized in the direction of B with the spring 129. Therefore, the press member 121 will be extruded in the direction of B with a spring 129, if a lever 103 is moved in the direction of A, and if a lever 103 returns, it will be pulled back in the direction opposite to B with a string 127.

[0040] When a lever 103 is moved in the direction of A according to the above-mentioned configuration, the press member 121 contacts push and adherend 9 in the direction of outside, and makes them stick a masking tape 1 on it from the tooth back of a carrier 7. A gearing 109 rotates and a wheel 111 is positioned in the location which specified quantity rolling up and a tape 1 secede from a carrier 7, and the following tape 1 is sent on the press member 121 with it, and is stuck in a carrier at the same time the press member 121 will return in the direction of the case inside, if a lever 103 is returned.

[0041] The equipment 100 shown in above-mentioned drawing 11 is the fundamental example of manual system, and it is also possible to constitute so that a motor etc. may be used instead of a lever 103 or a gearing 105, a gearing 109 may be rotated and a specified quantity [every] carrier may be regularly rolled round by electronics control. Furthermore, instead of pressing a carrier by the press member, if the equipment 100 whole constitutes along the direction of B so that it may be movable, and it prepares for a car production line as a head for masking, it will become possible to automate a masking process.

[0042]

[Example] Hereafter, an example explains this invention to a detail further.

[0043] The following preparation approaches (1) Or (2) It followed, what supported on the carrier the continuation masking tape which covered the adhesive face of the layer structure shown in drawing 7 or 8 with the one side releasing paper was prepared, and it was made the piece of masking with a diameter of 3cm which cut the tape by blanking and was located in a line on the carrier at equal intervals. The one side releasing paper which remained on the adhesive face of the piece of masking was removed, it wound in the shape of a roll like drawing 5, and the masking material of samples 1-8 was obtained. This roll is undone, on a

flat surface, an adhesive face is turned upwards, is laid, and it is a covering plate 3kg/cm². The covering plate was separated from masking material after pressing for 1 second to the piece of masking by the pressure. This actuation was performed about 50 pieces of masking, and the rate at which the piece of masking shifts to a covering plate was investigated. The preparation approach (1) To Table 1, it is the preparation approach (2) about the result depended on the obtained piece of masking. The obtained result is shown in Table 2.

[0044] Remover processing of whenever [exfoliation / which is different to both sides of the film for preparation approach (1) carriers] was performed, and the low processing side of detachability was made into the support side. Next, the solution of thermoplastics was applied to the support side of a carrier so that the solid content thickness of resin might be set to about 5-10 micrometers using a knife coating machine, the laminating of the thermoplastics film was carried out, and the base material was formed. On the other hand, a binder is applied on the exfoliation processing side of an one side releasing paper, a fiber material is carried on it, further, on it, the binder was applied and the binder was infiltrated to both sides of a fiber material. The laminating of the bilayer sinking-in fiber material on an one side releasing paper was carried out on the thermoplastics film formed in the carrier, and the adhesive tape for masking with the same laminated structure as what is shown in drawing 7 was obtained.

[0045] The preparation approach (2) and (1) Remover processing of a degree which is different to both sides of a carrier film by the same approach is performed. A heat shrink nature fiber material is immersed and infiltrated into the solution of thermoplastics, the obtained fiber material is applied to the low support side of whenever [carrier's exfoliation] using a roll coater, and the thermoplastics cast film containing a fiber material is formed. The masking tape which has the same laminated structure as what is shown in drawing 8 was obtained by using a roll coater and besides, applying a binder.

[0046]

[Table 1]

試料	1	2	3	4
キヤリア				
材質	ポリエチレン	ポリエチレン テレフタレート	ポリエチレン	ポリエチレン
厚さ(μm)	110	38	110	110
剥離剤				
材質	シリコーン	シリコーン	シリコーン	シリコーン
剥離力(gf/50mm)				
担持面	200	90	200	200
裏面	50	30	50	50
支持体				
成分(Wt%)	ポリ塩化ビニル	ポリスチレン	ポリ塩化 ビニリデン トルエン	ポリ酢酸ビニル エマルジョン(50wt%) 水
溶媒(Wt%)	トルエン	トルエン		
固形厚さ(μm)	10	10	10	15
繊維材				
材質	レーヨン	レーヨン	ポリプロピレン	レーヨン
厚さ(μm)	20	20	20	20
目付け(g/m ²)	8	8	15	14
粘着剤				
成分(Wt%)	アクリル系 (55wt%)	天然ゴム系	アクリル系 (55wt%)	アクリル系 (55wt%)
粘着力(gf/10mm)	300	200	200	400
厚さ(μm)	80	60	70	80
〔含繊維材〕				
被着体	鋼板	鋼板	鋼板	鋼板
移行率(%)	100	100	100	100

[Table 2]

試料	5	6	7	8
キャリア				
材質	ポリエチレン	ポリエチレン テレフタレート	ポリエチレン	ポリエチレン
厚さ(μm)	110	38	110	110
剥離剤				
材質	シリコーン	シリコーン	シリコーン	シリコーン
剥離力(gf/50mm)	200	90	200	200
担持面	50	30	50	50
裏面				
支持体				
成分(Wt%)	ポリ塩化ビニル	ポリスチレン	ポリ塩化 ビニリデン トルエン	ポリ酢酸ビニル エマルジョン(50wt%) 水
溶媒(Wt%)	トルエン	トルエン	100	100
固形厚さ(μm)	80	80		
〔含繊維材〕				
繊維材				
材質	レーヨン	レーヨン	ポリプロピレン	レーヨン
厚さ(μm)	20	20	20	20
目付け(g/m ²)	8	8	15	14
粘着剤				
成分(Wt%)	アクリル系 (55wt%)	天然ゴム系	アクリル系 (55wt%)	アクリル系 (55wt%)
粘着力(gf/10mm)	250	200	250	400
厚さ(μm)	20	20	20	20
被着体	鋼板	鋼板	鋼板	鋼板
移行率(%)	100	100	100	100

It is clear that it is possible to mask adherend certainly convenient using the masking material which made the masking tape support with a field opposite to an adhesive face on a carrier, and the above-mentioned result shows that this invention is suitable for mechanization of a

masking process.

[0047] In addition, the masking approach and masking material concerning this invention of it being available at attachment processes, such as various adhesive tape not only in masking in a car production process but various product production processes, an adhesion seal, and a pressure sensitive adhesive label, are natural.

[0048]

[Effect of the Invention] As explained above, the adhesive tape material of this invention, the attachment approach of adhesive tape, and attachment equipment are advantageous to mechanizing an attachment process, it excels in economical efficiency etc. fully taking advantage of the simplicity of a configuration, and the industrial value is size very much.

[Translation done.]